DELAWARE STATE MEDICAL JOURNAL

Issued Monthly Under the Supervision of the Publication Committee
Owned and Published by the Medical Society of Delaware

VOLUME 17
NUMBER 7

JULY, 1945

Per Copy, 20c
Per Year, $2.00

PRACTICAL APPLICATION OF THE Rh BLOOD TYPE

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Five years have now passed since the Rh blood type was first demonstrated. During this period the role of this type on transfusion reactions and its relation to hemolytic anemia of the newborn have been clearly demonstrated. Statistical evidence has been verified and clinical cases have appeared which have fulfilled theoretical predictions. Cases of twins showing both negative and positive types have been reported in which the Rh positive twin was affected with hemolytic anemia.[1] A few cases of artificial insemination are on record in known erythroblastic families with normal children resulting from an Rh negative donor.[2]

Like all medical progress the practical applications have been confused by overenthusiasm and unwarranted conclusions. Today, however, there is sufficient knowledge to relegate the problem to a proper place in respect to its known relation to transfusion reactions and hemolytic anemias of the newborn. Approximately 12% of marriages occur with Rh negative females and Rh positive males. If 50% of the males were heterozygous, or capable of producing Rh negative offspring, there still would be an expected incidence of hemolytic anemia of the newborn of 9%. Actually the incidence is only approximately 1 in 250 to 500 pregnancies.[3]

Thus, while one in seven individuals is Rh negative, it is apparent that all of these do not become sensitized when pregnant with an Rh positive fetus, or similarly when transfused with Rh positive blood. Inherent individual differences apparently alter the extent of sensitizations. It has been shown [4,5] that approximately 90% of all hemolytic transfusion reactions are due to the Rh factor. This does not infer, however, that all types of transfusion reactions are explained by Rh incompatibility.

It is important, however, that all candidates for repeated transfusions and all women, particularly of child bearing age, should be Rh typed to avoid difficulty. Every hospital now has examples of patients who, having suffered numerous reactions in the past, when found to be Rh negative and properly matched, showed no further trouble. The dangers of sensitization and reaction years after transfusions of the wrong type of Rh blood are now being reported and indicate the importance of careful blood typing.[5]

Today it is generally accepted [4,6] that there are three basic Rh factors, Rho, Rh' and Rh'', which in combination produce the additional factors, Rho' or Rh1; Rho' or Rh2; and Rh1, Rh2. This classification is based on the existence of 3 varieties of anti-Rh agglutinins: one which clumps about 85% of white bloods collected at random (Anti-Rho); the second clumping 70% (Anti-Rh'); and the third reacting with 30% (Anti-Rh'').

Rh Sub-Groups—Reactions (after Wiener (4)

Types	% Distribution	Anti Rho (85%)	Anti Rh' (70%)	Anti Rh'' (30%)
Rh negative	12.9	—	—	—
Rh'	0.9	—	+	—
Rh''	0.3	—	—	+
Rho	2.6	+	—	—
Rho' (Rh1)	54.1	+	+	—
Rho'' (Rh2)	12.8	+	—	+
Rh1 Rh2	16.4	+	+	+

While it is desirable to determine the Rh type by using all serums, the rarity of the 30% variety prohibits its routine use in most general laboratories. For practical clinical purposes the use of Anti Rho serum (85%) is sufficient and will pick up all but 1.2% of the positives.

Much confusion and many inaccurate results have occurred in the average hospital during the past through the use of weak or diluted serums which had aged and lost potency, and through improperly controlled

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tests. The test requires more careful handling than the routine typing and even then the intensity of the reaction is known to vary from day to day with the same serum.

Once a pregnant woman is found to be Rh negative her husband should be checked. If he is found positive, the finding of a sibling, parent or child as Rh negative would indicate him to be heterozygous, and capable of having 50% Rh negative offspring. Additional information regarding such a pregnancy may be obtained by checking the mother's serum during the seventh to eighth month for the presence of Anti-Rh agglutinins. This is done by testing the serum with 10 known Rh positive type 4-0 cells which include both Rh1 and Rh2 subtypes. Because of the tendency of many of these serums to react in undiluted state[7] due to a prozone-like phenomenon, many typical cases of hemolytic anemia were first thought unassociated with antibody rise. Weiner[8] demonstrated blocking antibodies as the cause of this inhibition. They can be removed by absorption with Rh positive cells or by use of cells suspended in plasma or albumin instead of saline.[9] This feature is well demonstrated in a typical case of Rh sensitization resulting in fetal hydrops.

Case Ry: 2-A, Rh-negative mother had a normal delivery in 1936. She delivered a 2-A, jaundiced infant in 1938 who subsequently became athetoid. In 1940 she delivered, by section, a child which died in 4 days of hemolytic anemia. She received several transfusions from her husband and suffered progressively violent transfusion reactions culminating in a reaction which was associated with anuria and shock. During another pregnancy in 1943 her serum was titrated against her husband's cells and rose from 1/20 at the second month to 1/225 at 6½ months, when it dropped precipitously. A fetal hydrops was delivered at the 7th month when the titer was back at 1/20. When the antibody titer was the highest the patient's serum and husband's cells were compatible until a dilution of over 100 was reached, indicating the presence of a prozone phenomenon.

Recently Diamond[10] has suggested a rapid method of demonstrating anti-Rh agglutinins that avoids the difficulties resulting from the inhibitor substance. This is accomplished by using a 50% suspension of test cells with the serum to be analyzed, rather than the usual 2% suspension. Another test to demonstrate blocking substance has been outlined by Weiner.[8] In this procedure unknown serum is mixed with known anti-Rho serum and then tested with known Rh1 and Rh2 cells.

As natural sensitivity to the Rh types is not known, the presence of anti-Rh agglutinins immediately suggests sensitization as a result of pregnancy or from previous transfusions. During pregnancy the antibody titer usually does not increase appreciably until the 7th or 8th month. As the severity of the disease in the newborn is thought to be proportional to the amount of anti-Rh agglutinin which passes through the placenta, early delivery of the infant, when large enough to be viable, usually results in a milder degree of hemolytic anemia than if it had been allowed to remain until full term. If one is aware of the possibility of hemolytic anemia a pre-arranged plan of management can be prepared. As the major problem in the infant is anemia, it is best combated with transfusions. Maternal whole blood should not be used, as its anti-Rh agglutinins when injected into the infant will increase the severity of the disease, or, as has been shown in past, result in death of the child. The father's blood or any Rh positive blood which would react with the mother's antibodies still in the infant should not be used. Ideally, Rh negative blood should be used.[11] When Rh negative blood is not available, a satisfactory red blood cell suspension may be prepared by washing the mother's citrated blood free of plasma and resuspending the cells in saline or compatible plasma. As an added precaution against reaction from natural iso-agglutinins, it has been our policy to neutralize selected Rh negative, 4-0, bloods with an appropriate amount of soluble group-specific substances of Witebsky[12] (courtesy of Eli Lilly and Company). As an important part of treatment, breast feedings are omitted, as additional hemolysis may result from antibodies known to be present in the mother's milk.[13]

The average newborn infant has a blood volume of 250 cc.[14] Depending on the severity of the disease from 2 to 6 transfusions at 10 cc. per pound of body weight is usually suf-

ficient to tide the case over the period in which the Rh anti-bodies are still present, to the time that the infant's own blood remains unharmed in the circulation. These anti-bodies may persist in their action for 6 or 7 weeks. Their elimination may conveniently be detected by watching for a rise in the infant's reticulocytes and a rise in Rh positive cells in the differential typing. As a normal child has a hemoglobin of 12 grams, an attempt should be made to maintain this amount by transfusions until the patient can maintain this level unassisted.

The following reports illustrate the successful management of two typical cases:

Case Bi: The mother, a 4-0, Rh negative, had a normal 4-0, Rh positive delivery in 1938 followed by typical erythroblastic still-births in 1940, 1941 and 1942. She had received no transfusions. Her husband was 4-0, Rh positive. In January, 1945, approximately 8 months pregnant, a suggestion of Rh antibody was found. Delivery was electively induced and mother's blood was washed in preparation. The infant was jaundiced, edematous, and had a large liver and spleen and a total nucleated count of 55,000, with 65% nucleated red cells. The hemoglobin was 4.5 grams. Transfusions were immediately started with mother's washed blood cells and subsequently with type 4-0, Rh negative, neutralized blood. A subsequent check confirmed by Dr. L. K. Diamond, Boston, Massachusetts, showed the mother's serum to contain anti-Rho agglutinins with a titer of 1/128. The child's red cell regeneration and reticulocyte rise became apparent on the 20th day and rose to 3.3% on the 47th day. A differential typing revealed that the child had become 90% negative by the 15th day and was still 25% negative on the 90th day when he returned to the hospital in normal health, for an uneventful circumcision. (Chart I.)

Case Ru: The mother, 2-A, Rh negative, had a normal 4-0, Rh positive, male child in 1941. Husband was 4-0, Rh positive. There was no history of previous transfusions. On 4-30-45 she delivered a 4-0, Rh positive, female child which was jaundiced at birth. R. B. C., 4.5 millions; hemoglobin, 19.1 gms; total nucleated count 20,100 with a 15% nucleated red cells. The jaundice deepened, the spleen became palpable, and the hemoglobin dropped to 13.8 grams. Transfusion therapy began on 4-30-45 with type 4-0, Rh negative, neutralized blood, was continued through the 30th day maintaining the child at

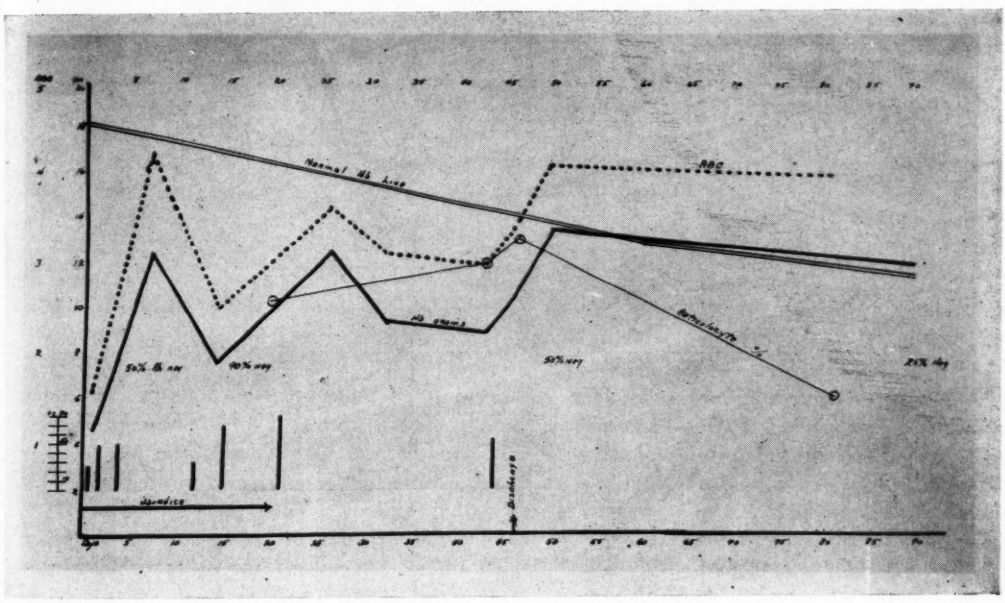

Chart I

approximately a 90% Rh negative type. More than the necessary amount of blood was probably used and the red cells regeneration was not apparent until the 50th day. Analysis of the mother's serum revealed agglutinins with a titer of 1/64 that resembled Anti-Rh' (70%) serum, and in addition there was a distinct incomplete Rho blocker, confirmed by Dr. L. K. Diamond, Boston, Massachusetts. The child has continued well. (Chart II.)

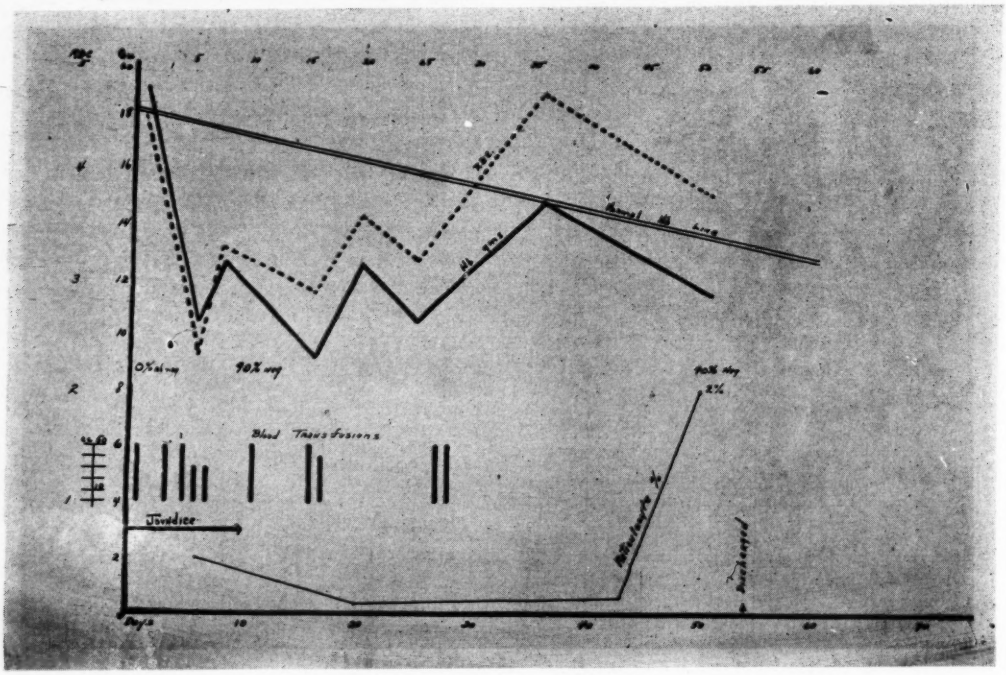

Chart II

A few cases of erythroblastosis have been shown to have resulted from intra-group sensitization when mothers were Rh positive and from Hr sensitization.[6] Such cases are extremely rare and seldom seen in the average hospital.

CONCLUSIONS

Role of the Rh factor in hemolytic anemia of the newborn and transfusion reactions is well established.

All individuals who are scheduled for repeated transfusions, or who have a history of transfusion reactions, and all women of child bearing age or maternity patients scheduled for transfusion should be Rh checked.

Rh negative recipients should receive Rh negative blood, especially those who show anti-Rh agglutinins.

Cases of hemolytic anemia of the newborn should receive Rh negative blood or mother's washed blood until there is an evident reticulocyte rise indicating elimination of anti-Rh agglutinins.

As anti-Rh agglutinins appear in human milk, breast feeding should not be advised.

Anti-Rh determinations should be made in pregnant women who have lost previous pregnancies as late still births or cases of severe jaundice or anemia; or those who have Rh positive husbands and one or more Rh positive children.

The presence of rising anti-Rh agglutinins during 7-8 months of pregnancy necessitates early delivery in order to decrease the amount of hemolytic anemia in the infant, and permits a pre-arranged plan of management to be prepared.

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SKIN LESIONS ATTENDING THE USE OF PENICILLIN

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INTRODUCTION

Urticaria is not an uncommon occurrence during the administration of penicillin. Lyons[1] found urticaria in 12 of 209 patients receiving penicillin. Keefer and his associates[2] described 14 instances of urticarial eruptions in their review of the use of penicillin in 500 patients. Dawson and Hobby[3] noted 3 instances of urticaria among 100 patients receiving the drug, and Stokes[4] found urticaria in 2 of 182 patients so treated.

A summary of experiences with penicillin treated patients reported in medical literature during the past two years indicates that the incidence of urticaria during the use of the drug is approximately 3 per cent.

Such urticaria is usually characterized as being a mild and transient affair. Most authors[1 2 3 4 5 6] have found that such reactions are not accompanied by other and more serious manifestations of allergy. In numerous instances the urticaria has subsided spontaneously either with or without temporary discontinuance of the penicillin. Keefer[2] observed in 1943: "Whether these reactions are due to some impurity in the penicillin cannot be stated at present. In several cases in which penicillin has been given after an attack of urticaria, there have been no signs of recurrence."

Criep[7] performed intradermal tests with penicillin on a 23-year-old male who developed massive generalized urticaria following the administration of the drug. Intradermal tests were positive to penicillin, whereas penicillin (extract of spores) gave negative reactions.

Feinberg[8] selected 10 patients who gave positive skin reactions with various extracts of penicillin including penicillium notatum. Intradermal tests of penicillin gave uniformly negative reactions, suggesting that it is not the spores of the fungus which accounts for skin reactions of penicillin treated patients.

OTHER SKIN REACTIONS

Reports of other and more significant manifestations of skin allergy, such as dermatitis venenata, are appearing concomitant with the increased clinical use of penicillin. Pyle and Rattner[9] found an instance of contact dermatitis in an Army medical officer. The lesions affected the eyelids, the bridge of the nose, the forehead and face, the fingers, and the penis. The determatitis subsided when no contact was allowed with penicillin. A positive patch test was obtained and a return to contact with penicillin resulted in a recurrence of the dermatitis within twenty-four hours. Patch tests with the purest penicillin obtainable (crystalline) also gave positive skin reactions.

Graves, Carpenter and Unangst[10] reported the occurrence of an acute vesicular dermatitis in a white 46-year-old male, 3 hours after the first injection of penicillin. The lesions worsened with subsequent use of penicillin and subsided with the discontinuance of the drug. Intradermal tests with penicillin and with trichophytin were positive. A second patient, 20 years of age, suffered an itchy vesicular eruption on the fingers and palms after an injection of penicillin. This patient was likewise sensitive both to penicillin and to trichophytin intradermally. These authors point out the possibility that the dyshidrosiform lesions may have resulted from toxins liberated through the destruction of foci of trichophyton or other infectious agents by penicillin.

Binkley and Brockmole[11] reported instances of two physicians (hospital interns) who developed contact dermatitis on the face, hands and arms. The lesions healed when these physicians avoided exposure to solutions of penicillin. One man showed positive skin tests with intradermal injections of penicillin. The second failed to react to the intra-

dermal injection of 0.1 cc. of penicillin (5,000 units in one cubic centimeter). However, following the intramuscular injection of 60,000 units of penicillin, pruritus and a papular eruption of the hands and feet appeared within twenty-four hours. This was followed by edema and desquamation.

Silvers[12] found skin sensitivity in a chemist, age 36 years. The rash affected the eyelids and penis. In this patient the patch test with yellow amorphous sodium penicillin was positive. A patch test with the solution of pure white crystalline sodium penicillin was negative. The author concluded that the impurities present in the yellow amorphous sodium penicillin were responsible for the contact dermatitis.

A bullous dermatitis from parenteral injection of penicillin has been seen and reported by Morris and Downing[13].

In view of the importance of the question of an allergy either to penicillin or to impurities existing in present commercial preparations of the drug a case is reported in which there was apparent skin sensitivity to three of four brands of penicillin which were tested intradermally following the occurrence of severe urticaria.

CASE REPORT

M. S., a white male, had rheumatic fever at the age of 12 years. At the age of 18 years he was admitted to the Delaware Hospital, July 3, 1944, with the complaints of weakness, loss of weight and persistent fever following an acute upper respiratory infection. The patient was found to have clinical evidence of subacute bacterial endocarditis, and an alpha hemolytic streptococcus was cultured from blood obtained July 4 and again July 7. From July 8 until August 18 the patient received 100,000 units of penicillin in divided doses every twenty-four hours intramuscularly (a total of 4,000,000 units). The patient left the hospital August 20, 1944. He was symptom free until December, 1944, when he acquired another acute respiratory infection. This was followed by a low-grade fever. He was re-admitted to the hospital January 6, 1945, because of weakness, fever and pallor. Blood culture taken January 7 showed 116 colonies of alpha hemolytic streptococcus per 1 cc. of blood.

Intravenous penicillin was given January 8 to January 17 (200,000 units per day). Because of signs and symptoms of thrombophlebitis, beginning January 17 penicillin was given intramuscularly (30,000 units every three hours). On January 18 the patient developed slight itching of the skin. On January 19 the generalized pruritus was accompanied by large urticarial wheals. On January 20 because of the severity of the urticaria and the rise in body temperature, penicillin was discontinued and adrenalin in oil (0.5 cc.) was administered intramuscularly at four-hour intervals. The urticarial reaction did not completely subside until seventy-two hours after the discontinuance of penicillin. A patch test with brand "B" penicillin (the brand which he had been receiving) in a dilution of 5,000 units per cubic centimeter gave no reaction.

An intradermal test on January 30 with the same "B" brand penicillin (0.1 cc. of a solution containing 5,000 units per cubic centimeter) gave a strong reaction. A large wheal with a surrounding area of erythema appeared within thirty minutes. Brand "D" gave a negative skin test and beginning February 2 this brand was used for intramuscular treatment (180,000 units every twenty-four hours). There was no untoward reaction.

A week later brand "B" penicillin was used for the intramuscular injection without the patient's knowledge. A severe urticarial reaction appeared within six hours. The patient was returned to brand "D" the following day (240,000 units every twenty-four hours). The urticaria promptly disappeared.

On February 14 the patient was tested with four brands of penicillin (using 0.1 cc. of solutions containing 5,000 units per cubic centimeter). A wheal and erythema appeared with brands "A," "B," and "C." No reaction other than the usual slight "primary irritation" reaction appeared with brand "D." (Fig. I.)

Penicillin "B" was further tested intradermally by using progressive dilutions and giving a volume of 0.1 cc. A wheal with pseudopodia and a surrounding area of erythema was obtained with a dilution containing only 5 units per 1 cc.

Fig. 1 Photograph of Intradermal Tests, February 14, on patient M. S.
Upper left—Penicillin A
Upper right— " B
Lower left — " C
Lower right— " D

On March 7 skin tests were repeated without reaction. On March 9 he was given again brand "B" penicillin and this time developed no urticaria or other untoward symptoms.

SUMMARY

Review of the literature reveals that about 3 per cent of patients receiving penicillin parenterally develop allergic reaction varying in type and severity.

A case is reported in which severe urticaria developed from one brand of penicillin. Intradermal testing showed a positive reaction for this brand and for two others. A fourth brand showed no reaction by intradermal test and was administered to the patient without allergic manifestation. On one occasion the offending brand was given again, with repetition of the urticaria confirming the original observation of sensitivity to this brand. Some time later the patient had lost this sensitivity as determined by intradermal test and was then given this particular brand without allergic reaction.

CONCLUSION

If urticaria occurs in the administration of penicillin, skin testing with other brands may reveal a product to which the patient is not sensitive. Continuation of treatment may then be carried out without what might otherwise be a serious interruption.

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PERIARTERITIS NODOSA*

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Periarteritis nodosa is a disease of the smaller and medium sized blood vessels. It is an inflammatory disease, as yet of unknown etiology. The disease is of great interest because of its bizarre nature and protean manifestations. It may involve any or many vessels in various parts of the body, and in different degrees, and therein lies the pathologic picture giving rise to its variable symptomatology.

Etiology. Each etiologic agent hitherto considered a possible cause of this disease has been discounted or discredited. The concept of Kussmaul and Maier[1], 1866, that of the syphilitic nature of this disease, has been disproved. Its association with rheumatic fever has been observed. In Boyd's[2] series of 100

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cases, 34 had a history of rheumatic fever. Krupp[3] has noted the similarity of periarteritis nodosa with lupus erythematosis. The filterable virus theory has its advocates, Bennett and Levine[4] among these; and a parasitic theory has been suggested. Rich[5] puts forward a hypersensitization theory. He describes generalized vascular lesions characteristic of periarteritis nodosa following therapeutic injections of foreign protein, a hypersensitive reaction. Clark and Kaplan[6] noted similar lesions following serum therapy. The relationship with bronchial asthma has been recorded. Harris[7] reports that asthma occurred in 15% of his cases. The presence of eosinophilia in many of these cases adds weight to the allergic theory. Rackemann and Green's[8] series showed a marked leucocytosis and eosinophilia. Harkavy[9] also supports the view that periarteritis nodosa represents an allergic response. McCall and Pennock[10] suggest a toxic origin of this disease because of the "wide dissemination of the lesions." They report 12 cases of a fulminating variety that came to autopsy.

Pathology. The chief pathologic lesions are noted in the walls of the smaller and medium sized blood vessels. Small nodules along the course of superficial arteries may be detected on palpation of the skin. Any organ or tissue may be affected, even the arteries of nerve trunks are not spared.

The microscopic picture is typical. There is an infiltration into the media with polymorphonuclear leukocytes, many containing eosinophilic granules. A few lymphocytes and a small number of fibroblasts are also found in the lesions. Necrosis of the vessel wall occurs. As the disease progresses small hemorrhages occur and small aneurysms may develop. The process may extend to the internal elastic lamina and outward to the adventitia and perivascular tissue. The end result of this inflammatory process is infarction of the tissue or organ supplied by the affected vessels which are being gradually occluded.

Arkin[12] in 1930, divided the disease into four stages. The first was termed the primary or degenerative stage, in which there is necrosis of the media with leucocytic infiltration. An acute inflammatory stage follows, with an increased infiltration of neutrophiles and eosinophiles. At this time there is destruction of the media and internal elastic lamina. The third stage is the granulation tissue stage; and the fourth, the scar tissue stage. A fibrous tissue replacement of the injured vessel wall occurs, with canalization of the thrombus. It has been stated that the internal elastic lamina may reform.

Clinical Picture. The disease is bizarre and the symptoms depend on the location and extent of the pathologic process and the size of the blood vessels involved. The disease may be in different stages in various tissues or organs of the body at the same time.

The past medical history may include the association with asthma, other allergic manifestations, or rheumatic activity.

The principal general symptoms include: weakness, loss of weight, rapid pulse, irregular fever, joint pains, paresthesias, and those symptoms referable to the system principally involved, e. g., cardiovascular: palpitation, precordial distress, hypertension—gastrointestinal tract: abdominal pain, vomiting, melena, diarrhea—renal: albuminuria, hematuria, azotemia. A rash is occasionally observed and it may be purpuric, erythematous, or maculopapular. The blood picture may show a secondary anemia but leucocytosis and eosinophilia, as has been stated, are frequently observed.

Differential Diagnosis. The complexity of the symptoms makes a definite diagnosis difficult. More cases are diagnosed clinically[13 14 15] now because the profession is on the lookout for this disease. Muscle biopsy, a relatively simple procedure can be done, and is a distinct aid in the differential diagnosis.

Prognosis. The prognosis depends on the site of the lesion and the extent of involvement. The literature contains references to many cases all too fulminating, in which the diagnosis was made only at autopsy. The milder cases are being diagnosed now because of increased interest, and newer methods of diagnosis.

Treatment. The treatment is purely symptomatic and supportive.

CASE REPORT

The patient is an adult female, 41 years of

age. The family history is negative for cardiovascular disease or allergic disorders. The patient denies having had any serious illnesses in the past. She was married at 18 and has 2 sons, aged 22 and 24 years. An appendectomy was done in 1931. Her average weight had been about 220 lbs.

The present illness may date back 5 years, when the patient first noted "crushing" pain in her chest on exertion. During the past year, however, this pain has been more pronounced. In addition there has been achiness in both arms, and some ankle edema. Headache, dizziness and fainting spells have been severe, especially for the past two months.

The patient was admitted to the Wilmington General Hospital on 4/8/45. Her blood pressure on admission was 130/94, although her pressure three weeks previously was recorded as 220/120. The body weight was 194 lbs. There was no fever. The blood studies revealed a blood sugar of 88mg%; a BUN of 14mg%; total protein, 6.3gm%; globulin, 1.7gm%; albumen, 4.6gm%. The Wassermann and Kahn reactions were negative. The sedimentation rate was 9 mm. in 1 hour. All urinalyses were negative. The blood counts were as follows: RBC between 3.9 million and 4.1 million; Hb, 11.5 to 12 mg. (76.6 to 80%); WBC, 9,800 to 12,200, of which 42 to 50% were mature neutrophiles, 2 to 10% were immature forms, 20 to 21% were lymphocytes, 2 to 4% monocytes, and eosinophiles 25 to 34%. The BMR was minus 17. X-ray of the gall bladder revealed a normal functioning organ. Electro cardiograms showed deep Q and inverted T waves in lead III. The ST segments were isoelectric. The patient probably had an occlusion of a branch of the posterior coronary with myocardial infarction.

Stool examinations for occult blood, ova, and parasites were all negative. Serum agglutination tests for enteric organisms were negative. A muscle biopsy was done and a blood vessel picture typical of periarteritis nodosa was found. The muscle specimen was negative for trichiniae. (Fig. 1)

The patient was kept at rest for several weeks and then allowed to go home. She is fairly comfortable at this time, although severe effort will produce dyspnea and precordial distress. Her blood pressure varies between 110/70 and 140/100. She has had several mild dizzy spells in the past month;

Fig. 1. Periarteritis Nodosa.
Neutro- and eosinophilic peri-vascular infiltration hematoxylin-eosin stain. x 200.

but is able to do her own housework and errands.

The treatment was symptomatic. Sedatives were used in addition to moderate doses of potassium iodide. Weight reduction was advised and the patient now weighs 184 lbs.

SUMMARY

A case report of her periarteritis nodosa diagnosed during life is presented. The clue to the correct diagnosis was the marked eosinophilia, for which there was no explanation, as the patient denied any history of allergic manifestations. The patient had not received any medication either by mouth or by injection in the past several years. At no time was there any fever. The diagnosis was made by muscle biopsy. The picture conformed with the early stage of Arkin[12].

Periarteritis nodosa should always be considered in a baffling case with varied symptomatology and widespread involvement.

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CLINICAL CASES FROM THE HOSPITALS

HAND — SCHULLER — CHRISTIAN'S DISEASE*

Dr. Irving Cooper: Baby C was born at the Delaware Hospital on 2/18/40, weighing 9 lbs. 9 oz., and appearing grossly normal in all respects. On 7/21/40 she was admitted complaining of cough and wheezing respirations, and enlarged anterior and posterior cervical lymph nodes were noticed. RBC, 4.6 million; Hb, 12 grams; WBC, 16,200. The patient was treated for an acute pharyngitis with sulfonamides and made an uneventful recovery. In August, 1941, the child began to lose its appetite and became restless. The nodes in the neck became obviously enlarged and the inguinal nodes were palpable. She was again admitted on 11/21/41 with generalized adenopathy. The serology was negative. A pathological study of one of the enlarged cervical nodes revealed an extensive infiltration with histiocytes filled with lipoid and large number of eosinophiles. A diagnosis of lipoid histiocytosis was confirmed by Dr. Fred W. Stewart of New York City (Plate I). During this year the hemoglobin dropped to 9 grams, while the RBC remained around 4.2 million. On 2/21/42 another pathological examination of a cervical lymph node revealed similar changes but without the eosinophilia. In March, 1942, x-ray showed for the first time areas of bone destruction in the eighth left posterior rib at the posterior axillary line and in the fifth right rib in the anterior axillary line. The blood count showed a progressive anemia.

During March, 1942, the patient received

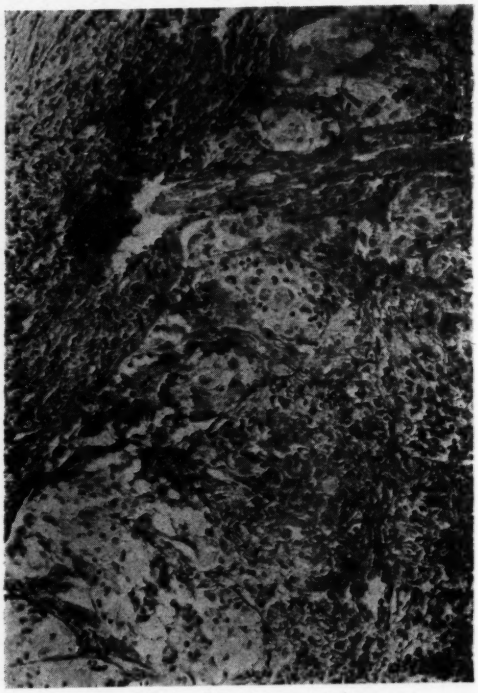

Plate 1. Initial lesion, cervical lymph nodes. x 130. Case C.

400 R therapy to each side of the neck and 300 R to each inguinal region, with marked decrease in the size of the nodes. In August, 1942, 700 R additional were given to each side of the neck without appreciable improve-

Plate 2. Skull, lateral view, showing an unusual type of destruction resembling metastatic carcinoma. Case C.

*From the staff meeting, Delaware Hospital.

ment. By January 12, 1943, the lesions in the ribs showed more involvement and in addition there were areas of destruction in the right clavicle and skull (Plate 2). The roentgenological findings were then sufficient to suggest a diagnosis of Hand-Schuller-Christian's Disease. In October, 1943, there were new areas of bony involvement, and it was noted that many of the areas of destruction in the long bones previously reported had almost completely disappeared.

The disease progressed slowly with an increasing anemia. The child had a poor appetite, but drank unusually large amounts of water, suggesting a pituitary lesion and diabetes insipidus. By February, 1945, there was generalized lymphadenopathy and enlargement of both the liver and the spleen. Over the lower thoracic vertebrae a soft tumorous mass appeared beneath the skin (Plate 3). X-ray revealed involvement of virtually the entire skeleton and a large soft tissue mass over the region of the lower dorsal and lumbar spine posteriorly, with more or less complete destruction of the lamina, spine and lateral regions of the 12th dorsal and a portion of the posterior portion of the 11th dorsal and 1st lumbar vertebrae (Plate 4). The anemia and diabetes increased, the RBC dropped to 1 million, and the Hb to 3 grams. In April, 1945, the tumorous mass broke down, ulcerated, and spinal fluid was thought to be seeping from the area. The patient failed rapidly and died 4/25/45.

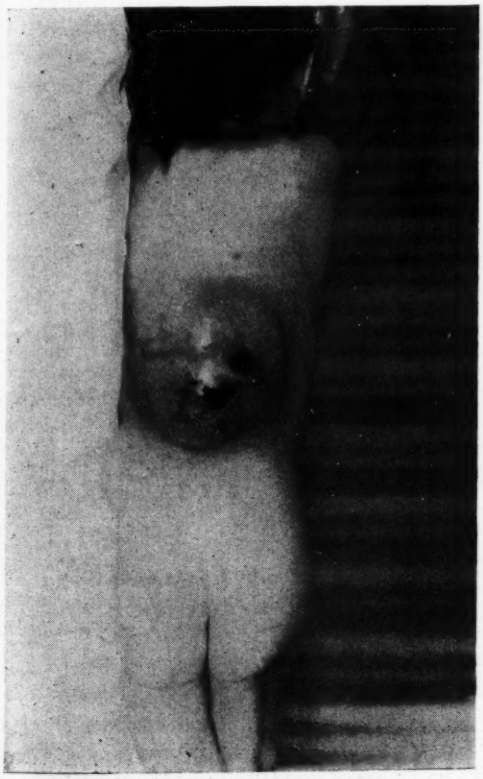

Plate 3. Terminal back lesion, showing early ulceration. Case C.

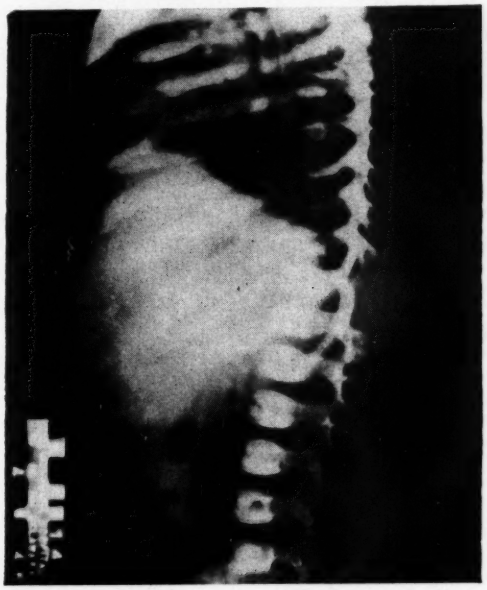

Plate 4. Spine, lateral view terminally, showing diffuse bony involvement and a soft tissue mass in lower dorsal region, with destruction of the spinous process of the 12th dorsal vertebra. Case C.

Autopsy Findings. The body appeared extremely pale with a peculiar yellowish discoloration and edema of the skin. Over the back there was a 6 x 8 cm. necrotic soft yellow-black tumor mass. The liver weighed 800 grams and contained hundreds of 2-5 mm. yellow-orange nodules. The spleen weighed 154 grams and was almost entirely replaced with miliary yellow nodules. The kidneys were swollen and nephrotic in appearance and there was an annular fibrous obstruction of the left ureter close to the bladder. The lymph nodes showed extensive infiltration with soft yellow-brown fatty mate-

rial. The pituitary showed grossly visible infiltration with yellow-orange tissue. The bone marrow was diffusely studded with fatty green-yellowish nodules. Microscopically all of the organs described showed diffuse infiltration with lipoid filled histiocytes which in many areas were undergoing chronic granulomatous changes resulting in fibrosis and foreign body giant cell reaction (Plate 5). The

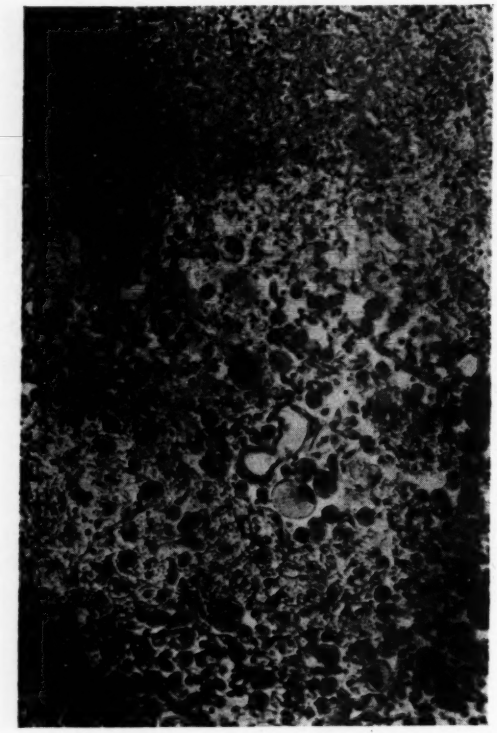

Plate 5. Granulomatous lesion of back. x 130. Case C.

infiltration of the pituitary was entirely in and around the posterior lobe, clearly localizing the lesion of diabetes insipidus. The annular obstruction of the left ureter was likewise found to be due to a collar of fibrosing lipoid histiocytes. The bone marrow showed both old and new types of granulomatous involvement which has resulted in an extensive replacement of the normal marrow elements and the resulting marked myelophthtisic anemia. The involved areas throughout the organs showed a positive reaction with sudan IV stain for fat. Examination of frozen section material by Dr. Charles Todd and Dr. W. M. D. Bryant at the Dupont Experimental Station showed morphologically typical cholesterol crystals in the tissue which were doubly refractile under the polarizing microscope and showed an optical axial angle of 39°.

DISCUSSION

Dr. John W. Howard: The diagnosis of lipoid histiocytosis, Hand-Schuller-Christian variety, is well illustrated by the clinical course and autopsy findings. These peculiar diseases are now attributed to a defect in the metabolic processes of the reticulo-endothelial cells. They are customarily divided into several types on the basis of the chemical nature of the lipoid, as:

I. Cerebroside Lipoidosis—Gaucher's Disease

II. Phosphatide Lipoidosis
  a. Niemann-Pick's Disease
  b. Amaurotic Familial Idiocy

III. Cholesterol Lipoidosis
  a. Xanthomatosis
    1. Primary
    2. Secondary, caused by lipemia
  b. Hand-Schuller-Christian's Disease

Gauchers' Disease is a familial condition characterized by the deposition of kerasin chiefly in the liver, spleen, lymph nodes, and bone marrow. The spleen becomes greatly enlarged, and when found with leukopania in a child, should always suggest this condition. Pathologically, the involved tissues contain typical Gaucher's cells which differ from other type of foam cells seen in the lipoidoses in having a peculiar fibrillar striation of the cytoplasm.

Niemann-Pick's disease is a rapidly fatal disease of early childhood resembling Gaucher's disease but differing chemically and in the appearance of the foam cells.

Amaurotic familial idiocy (Tay-Sachs' disease) is an early childhood disorder characterized by idiocy and blindness, and a metabolic disorder which leads to deposition of lipids in the ganglia and glia cells. When

advanced, the alteration makes fresh brain resemble formalin fixed tissue. Some writers consider this condition closely related to Niemann-Pick's disease.

Xanthomatoses are characterized by variable sized orange-yellow tumor-like nodules, which may occur with or without hypercholesterolemia and occasionally as secondary lesions to such diseases as diabetes mellitus.

Hand-Schuller-Christian's disease produces changes which resembles the local xanthomatoses, but selectively involves the skull, pituitary, orbit, liver, spleen, lymph nodes, and other reticulo-endothelial tissues. The lesions as they advance undergo a fibrous granulomatous change, which is very striking in the case presented. Recently two other conditions have been classed as variants of this disease: eosinophilic granuloma of bone and non-lipoid reticulo-endotheliosis (Letterer-Siwe's disease).

Dr. W. W. Lattomus: The differential diagnosis of Hand-Schuller-Christian's Disease from an x-ray point of view includes the two closely related diseases of Gaucher and Niemann-Pick. In Niemann-Pick's disease the bones are rarely involved, and in Gauchers' disease the lower ends of the femora are most frequently involved and the skull is rarely effected.

The skull lesions must be differentiated from multiple myeloma, which presents a typical oil droplet appearance; from metastatic malignancy, which usually presents more of a moth eaten appearance and generally involves an older age group; and from advanced leukemia of childhood, which cannot be differentiated except by blood studies.

This case was somewhat unusual in that while the lymph nodes and spleen began enlarging in July, 1940, there were no demonstrable bone changes until March, 1942. The skull never presented the typical picture of xanthomatosis which has been described as a map-like appearance, but resembled metastatic carcinoma. Spontaneous remissions are sometimes reported and this was noted in the improvement of areas of involvement in the long bones between 4/13/43 and 10/23/43 without x-ray therapy over these areas.

Considerable improvement was noted after the first short series of x-ray treatments given to the neck and inguinal regions, but subsequent therapy had little or no effect.

Dr. Charles E. Wagner: Cases of Hand-Schuller-Christian's disease are rare. It usually occurs in childhood between two and six years of age, but was first discovered in this child when she was twenty-one months of age. It has only once been reported in two children in the same family. This child was one of eight children.

This disease shows no racial or sex predisposition. The onset is insidious and often follows some contagious disease. The case here presented followed an attack of tonsillitis and cervical adenitis.

During her stay in the hospital the patient craved water and drank large amounts of it. She soon voided an amount of urine almost equal to the amount of water she had imbibed. The task of keeping her bed dry required continuous vigilance on the part of the nurses. When she first came in the hospital she was able to concentrate her urine at a specific gravity of 1.016 to 1.020, but later the specific gravity was only 1.006.

In addition to the changes in the bones and the presence of diabetes insipidus in these cases, the presence of exophthalmous completes a triad of symptoms usually found. This patient, however, did not show any exophthalmous. When she was only four years of age, the four molar teeth had erupted, which usually do not come until children are six years of age. This would be in conformity with an endocrine disturbance.

While the cause of the disease is not known, the disease itself can be influenced to some extent by x-ray therapy. This child had very large glands in the cervical, supra-clavicular, and axillary regions which markedly diminished in size under x-ray treatment. The tumor which involved her spine, however, as a terminal feature of her illness was not benefited by x-ray treatment.

LABORATORY DIAGNOSIS OF MONILIASIS

ELVYN G. SCOTT, M. T.,*
Wilmington, Del.

Moniliasis is an acute or subacute mycotic infection, caused usually by a species of yeast-like fungus, *Candida* (Monilia) *albicans*. It may produce lesions in the mouth, vagina, skin, nails, bronchi, or lungs, and occasionally a septicemia, endocarditis, or meningitis. Since pathogenic stains have been isolated from the normal skin, oral or vaginal mucosa, and stool, and from sputum of tuberculous patients or other pulmonary conditions, its role as the etiologic agent is often difficult to assign.

Moniliasis[1] occurs in all ages, races and sexes, and has been reported from all parts of the world. It does not occur in epidemic form. Certain predisposing factors have been recognized in that the lesions are prone to develop in conditions of increased warmth and moisture. Thus lesions of the hands occur in housewives, maids, waiters, barkeepers and fruit packers; lesions of the lip and tongue occur frequently along with poorly fitting dentures; oral moniliasis is found most often in infants and elderly people with wasting diseases; and pregnancy and diabetes predispose to vaginal thrush.

The organism is most easily recognized, particularly from lesions of the tongue and intertriginous areas, as a tangled network of fine mycelium with clusters of budding, ovoid to spherical yeast-like cells, 3 to 10 microns in diameter. Skin and nail scrappings are best mounted on a slide with a drop of 10% potassium hydroxide, a cover slip added, and the slide gently heated over a low flame. Sputum and material from the mouth and vagina should be crushed under a cover glass, examined fresh, and then gram-stained. All material should then be cultured on Sabouraud's dextrose agar, incubated both at 37°C and at room temperature. In 4 to 5 days, growth becomes apparent as creamy, medium-sized, moist to dull colonies; having a distinct yeasty odor. Since *Candida albicans* is the only pathogenic (for laboratory animals) member of the genus, a rapid method of identification based on morphology on corn meal agar can be employed; the suspected colonies from the Sabouraud plate are transferred with a straight wire to a corn meal agar plate, making a deep cut in the agar. After about 3 to 5 days incubation at 37°C, *candida albicans* produces mycelium-bearing, ball-like clusters of budding cells, and characteristic thick-walled, round chlamydospores, which may be readily observed by examining the bottom of the petri plate with the lower power objective. If differentiation of species is desired, Martin's[2] procedure should be used:

1. After primary isolation on Sabouraud's medium, a colony is transferred to glucose acid broth and incubated at 37°C for 48 hours. Type of surface growth is noted.

2. Broth is then shaken and streaked to a beef extract blood agar plate, incubated at 37°C for 10 days. Type of colony is noted.

3. An isolated colony is then transferred to a Sabouraud glucose agar slant, incubated at 37°C for 48 hours, and inoculated.

   a. to a carrot plug, at room temperature, to be examined for asci, and

   b. to a beef extract agar slant, which is subcultured 2 to 3 times.

4. From the above, a corn meal slide culture is prepared[3], and 1% glucose, sucrose, lactose, and maltose beef extract broths are inoculated with a pipette from a heavy saline suspension of the last agar slant transplant. These are at 37°C and read in 10 days.

The reactions of the different species are summarized as follows:

*Bacteriologist, Delaware Hospital.

TABLE II: DIFFERENTIAL DIAGNOSIS OF SPECIES OF *Candida*

(From Martin et al. 1937)

	PATHOGENIC		NON-PATHOGENIC				
	C. albicans	*C. tropicalis*	*C. pseudotropicalis*	*C. Krusei*	*C. parakrusei*	*C. stellatoidea*	*C. Guilliermondi*
Sabouraud's agar	creamy growth	not characteristic	not characteristic	flat, dry	creamy	creamy	creamy growth
Sabouraud's broth	no surface growth (Fig. 73 *A*-2)	narrow surface film with bubbles (Fig. 73 *A*-1)	no surface growth	wide surface film (Fig. 73 *A*-3)	no surface growth	no surface growth	no surface growth
Blood agar	medium-sized, dull-gray colonies (Fig. 72 *A*)	large, gray colonies surrounded by mycelial fringe (Fig. 72 *B*)	colonies small, not characteristic	colonies small, irregularly shaped, flat or heaped (Fig. 72 *D*)	colonies small, brilliant white	colonies star-shaped (Fig. 72 *C*)	medium-sized, dull-gray colonies
Corn meal	branched, tree-like mycelium with chlamydospores (Fig. 73 *B*)	mycelium well-developed, branched, bearing numerous blastospores, no chlamydospores	mycelium poorly developed, no chlamydospores	"crossed sticks" mycelium, no chlamydospores (Fig. 73 *C*)	mycelium well-developed, no chlamydospores	mycelium with large, ball-like clusters of blastospores	mycelium well-developed, no chlamydospores
Glucose	AG	AG	AG	AG	AG*	AG	—†
Maltose	AG	AG	—	—	—	AG	—
Sucrose	A	AG	—	—	—	—	—
Lactose	—	—	AG	—	—	—	—

* Occasionally acid only.
† Langeron and Guerra report acid and gas produced in glucose and sucrose when cultured at 25° C. and held twenty days.

In the last six months at this hospital, the above method of identification being used, the following monilia species have been isolated:

Patient	Age	Lesion	Species
Baby M.	9 days	Oral thrush	C. albicans
Lillian B.	39 years	Sputum	C. albicans
Gretchen V.	51 years	Vaginitis with pyelonephritis	C. albicans
Regina B.	15 years	Empyema pus	C. Krusei
Baby N.		Oral thrush	C. albicans
Charles C.	35 years	Stomach contents Ruptured ulcer	C. stellatoidea
Mrs. C.	50 years	Paronychia and nail scrapings	C. albicans
Lena P.	48 years	Vaginitis	C. stellatoidea
Benjamin W.	21 years	Abdominal fluid for Ruptured appendix	C. Krusei

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Directress Resigns

Miss Mary M. Ferry, directress of nurses and superintendent of the School of Nursing at Wilmington General Hospital, resigned on June 6 from the hospital where she had served for 16 years. Her resignation was effective immediately and she is now in New York. Miss Ferry said that she had no definite future plans.

Acting directress of nurses at the hospital is Mrs. Mildred Dougherty Dillon.

In 1929 Miss Ferry came to Wilmington General Hospital as obstetrical supervisor, and in 1937 became directress. She has been a member of the state board of nurse examiners since 1933 when she was appointed by former Gov. C. Douglass Buck. Last month she was reappointed by Gov. Walter W. Bacon.

President of the Delaware State Nurses Association for the past six years, she is responsible for having the University of Pennsylvania extension courses brought to Wilmington. Last year, she was the only Delaware nurse to serve on the committee of the national board of the American Journal of Nursing.

Committee on Artificial Limbs

Announcing the organization by the National Academy of Sciences and the National Research Council of a Committee on Prosthetic Devices, *The Journal of the American Medical Association* for April 7 points out that this move brings the promise of new advances and progressive development in the manufacture of artificial limbs. *The Journal* says:

"At the request of the Surgeon General of the Army . . . the National Academy of Sciences and the National Research Council have organized a Committee on Prosthetic Devices. Here for the first time experts in the field of engineering will combine with surgeons and inventors to apply to the manufacture of artificial limbs the knowledge that has been gained in the fundamental sciences. The history of prosthetic devices indicates that there has been a failure to apply much of the knowledge that has become available. The tendency has been for manufacturers of devices to hold strictly to models which they have themselves developed and on which they might be able to establish patents. Brace makers and makers of artificial limbs frequently have held as trade secrets some of the improvements which they have developed and would teach them only to their own apprentices. Many new discoveries have been made in alloys of metals which would provide light weight malleability, freedom from rust and other desirable factors. These have, however, been incorporated too infrequently in the making of prosthetic devices. The committee will aim to incorporate these new advances into the making of artificial limbs and to bring about as much standardization as possible in parts and mechanisms so as to assure simplification of maintenance and repair. The auspices under which this committee has been established and the inclusion of such names as those of Kettering, Magnuson, McClure and Wilson mean that progress will be made. The chairman is Dr. Paul E. Klopsteg, professor of applied science at Northwestern University, who gives assurance that the points of view of engineering, production, fitting and servicing as well as the medical and surgical points of view will prevail in the work of this committee."

Proposed Research

Gentlemen:

Having had my thoughts verified by the United States Public Health Service, located at Bethesda, Maryland, as to the causes of certain cases of cancer, namely that of the stomach, I thought I should notify you about it.

The Cause—

The eating of an overabundance of certain kinds of foods, prepared a certain way, over a long period of years.

The Prevention—

A more varied diet, including at least one complete meal of raw vegetables every other day.

The Possible Cure—

Make a survey among the unfortunate sufferers of the dread malady to learn what foods they ate an overabundance of. Then use laboratory to discover what chemicals would counteract the effects of those that did the harm. When proper chemicals found, prescribe them in amounts according to the case.

Very sincerely yours,

J. F.

New York, N. Y.

Combat Badge for Medical Personnel

A special badge has been authorized for Medical Department personnel who daily share with the infantry the hazards and hardships of combat. Made of silver, the Medical Badge is elliptical in shape with the caduceus and the Geneva Cross superimposed on a litter surrounded by a wreath of oak leaves. It is to be worn on the left breast above decorations and service ribbons.

The badge was established in recognition of "the important role being performed by medical personnel on duty with infantry units, especially infantry battalions." Enlisted and officer personnel below field grade (major) and regimental surgeons regardless of rank are eligible for the badge if they have seen combat service with the infantry since December 7, 1941.—*News Notes, OSG,* No. 16.

+ Editorial +

DELAWARE STATE MEDICAL JOURNAL

Owned and published by the Medical Society of Delaware, a scientific society, non-profit corporation. Issued about the twentieth of each month under the supervision of the Committee on Publication.

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Subscription price: $2.00 per annum, in advance. Single copies, 20 cents. Foreign countries: $2.50 per annum.

VOL. 17 JULY, 1945 No. 7

SOME INSURANCE BLANKS

Two episodes happened yesterday in our office that bring up once again the subject of insurance blanks. There are insurance blanks and insurance blanks; these two happened to be "and blanks."

The first blank, along with the usual questions, contained this question: Is the disease Recurrent? — Venereal? — Tuberculous?— Congenital?—Malignant?— Another question was: What did the Wassermann show?

To answer these two questions without the consent of the patient involves a violation of professional secrecy, which the law imposes upon physicians. To answer these questions without consent, therefore, renders the physician liable to a damage suit if the insurance company makes any use of the information to the detriment of the patient. Why *any* insurance company would include a question that involves a violation of the confidential relation that exists between physician and patient is beyond us, and yet such a question is found on the blank all too often.

An added danger is the fact that frequently these blanks are filled out by the intern, in which case he exposes both the attending physician and the hospital to legal liability. New interns, immediately on their arrival, should be instructed that no blanks shall be filled out without the knowledge and consent of the attending physician, and that such questions as above are to be ignored.

Such questions are usually found on the blanks of the small weekly indemnity insurance companies, especially those whose patrons are colored people. My answer to this Wassermann question was: "Not taken, and do you think I'm d——— fool enough to tell you the results if it were taken, except under written waiver by the patient?"

The second episode concerned another of these small weekly indemnity companies. They demand a report from the doctor each week, otherwise they refuse to pay the indemnity. In other words A, the insured, and B, the insurer, enter into a contract. A pays his premiums on time and B refuses to pay unless C, the physician who is not a party to this contract at all, performs. This is a form of duress that is unwarranted and works a hardship on the busy physician, who does not like to charge this poor class of people one or two dollars each week for filling out the blanks.

These companies should be satisfied with the same type of reports the larger companies employ, that is, a report blank at the beginning of the illness and another when the patient is discharged, no matter how many weeks that may be. We propose to have the New Castle County Medical Society devote part of one of their programs in the Fall to a discussion of these and other problems relating to insurance blanks.

The Antivivisectionists Again

Commenting on Chicago's recent court trial against a group of Northwestern University officials on charges of cruelty to animals, the July 7 issue of the *Journal of the American Medical Association* says that "the antivivisectionist's purpose . . . is not the protection of animals, but the heckling of scientists."

The Journal said editorially:

Dr. Franklin Bliss Snyder, president of Northwestern University, Dr. George A. Gardner, acting dean of the Medical School, and Dr. Andrew C. Ivy of the physiology department, charged with cruelty to animals by Mrs. Grace Petkus, vice president of the Animal Welfare League, aided and abetted by Mrs. Irene Castle McLaughlin, were recently tried in a Chicago municipal court. After the testimony was heard, the judge dismissed the case. Reporters recognized the incident as merely another of the episodes involving the ex-actress and terpsichorean who seems to hanker continuously for the limelight and plaudits which once were hers. Said the *Chicago Sun,* in the issue of June 29, "That old courtroom drama, which might be called 'The Vivisection Blues' and which has played more return engagements here than Rose Marie, was on the boards again yesterday, this time in the Chicago Avenue Court before Judge John R. McSweeney. Mrs. Irene Castle McLaughlin appeared again as the emotional chief witness, a role she created years ago, and the final curtain found Judge McSweeney ruling for medical science and against Hearst's *Chicago Herald-American,* which for a decade or so has been the play's angel. It was the consenus afterward that unless a happier ending can be achieved 'The Vivisection Blues' never can be taken on the road." The *Chicago Tribune* featured Mrs. McLaughlin's costume. The *Chicago Times* said "Irene's crying act leaves court cold" and in a semifacetious manner emphasized Mrs. McLaughlin's clothes. The *Chicago Daily News* just noticed the incident, but the Hearst *Herald-American* devoted a column on page 7 to saying "We haven't begun to fight." Inadvertently, Mrs. McLaughlin disclosed the real issue. "Well," she is reported to have remarked, "we got a university president in court for the first time, anyway." The antivivisectionsts' purpose then is not the protection of animals but the heckling of scientists and perhaps, most important, getting their names and their pictures in the paper. We have seen la belle Castle's summer outfit; by next fall she will be ready no doubt to exhibit something special in furs from small animals trapped in the woods.

[Ed. Note—A similar episode was recently won in Maryland. These fanatics never seem to know when they are licked.]

BOOK REVIEWS

Preventive Medicine. By Mark F. Boyd, M. D., Field Staff Member, International Health Division, Rockefeller Foundation; formerly Professor of Bacteriology and Preventive Medicine, University of Texas. Seventh edition, revised. Pp. 591, with 187 illustrations. Cloth. Price, $5.50. Philadelphia: W. B. Saunders Company, 1945.

Boyd's book has been popular since 1920. This, the seventh edition, has been extensively revised and enlarged. New subjects are rheumatic fever, leptospirosis, and asbestosis. The section on nutrition has been entirely recast in the light of current concepts. The style is readable. The illustrations are excellent and the index complete. This new edition more than maintains the excellence of its predecessors, and will also maintain its popularity.

Physical Diagnosis. By Ralph H. Major, M. D., Professor of Medicine, University of Kansas. Third edition, revised. Pp. 444, with 458 illustrations. Price, $5.00. Philadelphia: W. B. Saunders Company, 1945.

It is a pleasure to examine another edition of Major's book. Written concisely, it covers accurately all the matter usually included in such a work. The text has been corrected in the light of recent advances in medical science. An occasional typographical error appears, such as fig. 352 for 353 on page 320, and Salier for Sailer on p. 333. The numerous illustrations are most helpful, making the book in effect a pictorial diagnosis. The volume is heartily commended.

Penicillin and Other Antibiotic Agents. By Wallace E. Herrell, M. D., Assistant Professor of Medicine, the Mayo Foundation, University of Minnesota. Pp. 348, with 45 illustrations, 5 in color. Cloth. Price, $5.00. Philadelphia: W. B. Saunders Company, 1945.

Penicillin Therapy, Including Tyrothricin and Other Antibiotic Therapy. By John A. Kolmer, M. D., Professor of Medicine, Temple University. Pp. 302, with 22 illustrations. Cloth. Price, $5.00. New York: D. Appleton-Century Company, 1945.

We are embarrassed. These two books arrived within twelve days of each other. Both are written by outstanding authorities; both are complete; both remind us of twins. Witness Herrell: "Nearly four years have elapsed since . . ."; and Kolmer: "Four years have now elapsed since . . ." The arrangements differ, as do the styles, and the illustrations, but the similarity in content is striking. Both books summarize the vast literature up to the time of going to press, and both contain excellent bibliographies. Both are going to be popular, and deservedly so. A choice is most difficult—"how happy I'd be with either were the other dear charmer away."

Rypin's Medical Licensure Examinations. Edited by Walter L. Bierring, M. D., Secretary, Federation of State Medical Boards of the United States. 5th edition. Pp. 546. Cloth. Price, $6.00. Philadelphia: J. B. Lippincott Company, 1945.

The subtitle of this book is: "Topical Summaries, Questions and Answers," which aptly describes the work. Each major subject review such as anatomy, chemistry, etc., has been proposed by a member of a panel of twelve competent writers, and epitomizes the subject accurately and adequately. Following this comes a list of typical questions taken from actual examinations. This is a better method than that of simple question and answer, which represents merly a cramming process and requires memory rather than understanding. A section on pharmacology appears for the first time.

We would suggest that in the question sections references be made to the pages on which the answers will be found. Also, that the index be amplified, e. g., circle of Willis is not indexed but is described on page 10; the canal of Nuck is not indexed as such, but is described on page 34; whereas Scarpa's triangle is both indexed and described. Parenthetically, we could find no reference to Hunters' canal, an old standby. We have no special love for eponymic terms, but a lot of them are here to stay and they should be quickly available.

For its purpose this is an excellent book and merits wide usage.

Doctors At War. Edited by Morris Fishbein, M. D., Editor, Journal of American Medical Association. Pp. 418, with 82 illustrations. Cloth. Price, $5.00. New York: E. P. Dutton and Company, 1945.

This is a compilation, the contributors being the topflight medical men in the Army, Navy, Public Health Service, Veterans' Administration, Procurement and Assignment, and Red Cross, sixteen in all. Every phase of medical preparation and activity in this war is described, their range being the whole wide world. The amazing accomplishments of the American medical men are told in full, and the telling fills us with pride in our American profession. Written for everybody, lay as well as medical, we hope the general public reads this informative and inspiring volume—only in a free-enterprise country could such near miracles come to pass. The results detailed in this volume could never come from a regimented medical profession. Just the book for that vacation.

Technical Methods for the Technician. By Adson Lee Brown, M. D., Director of Dr. Brown's Clinical Laboratory and Dr. Brown's School for Technicians. 3rd edition. Pp. 706, with 229 illustrations, and 12 color plates. Cloth. Price, $10.00. Columbus, Ohio: B-B Printing Company, 1944.

This new edition has been brought up to date, many new methods and procedures being included. Notable among them is the author's own micro-precipitation test for syphilis, which is presented for the first time. The tests given are in the main those that have been found most satisfactory in the Brown laboratory. The directions given are most explicit. Since the book is written primarily for students, there are frequent lists of questions covering the various chapters. New in this edition is a detailed bibliography and

a section entitled "Important Laboratory Data." This is a good book, but a bit unwieldy—there is a surprising amount of wasted space. The margins are too wide, too much of the text is indented, and whole pages are wasted on chapter titles; doubtless the volume was printed before the paper shortage became acute.

The Male Hormone. By Paul deKruiff. Pp. 243. Cloth. Price, $2.50. New York: Harcourt, Brace and Company, 1945.

In the best Kruiffian style the author tells —of course for the vast and paying public— about testosterone, as though he knew a lot about it, even though, as he admits, he is "only a reporter and not a doctor of medicine." The fact is that even the doctors themselves do not know very much about it; there are too many questions about its uses and effects yet to be settled to make any dogmatic pronouncements safe or worthwhile, yet this "roving editor of the Reader's Digest" blithely suggests (p. 222) that "millions of Americans" take it in the form of a "simple addition to their diets!" He assails the Council of Pharmacy and Chemistry of the A. M. A., our chief safeguard for scientific therapeutics, for not yet approving the drug; fortunately for the public said Council wants the facts first, and if and when the facts justify it said Council will certainly approve the drug. Till then deKruiff and his ilk should bide their time.

This is a typical deKruiff output; at 54 he should begin to be a bit scientific, but we didn't notice any such slant. In fact, we came to the conclusion that if the paying public paid it would probably receive more harm than good from this opus.

Men Under Stress. By Lt. Col. Roy R. Grinker, M. C., Army Air Forces, and Maj. John P. Spiegel, M. C., Army Air Forces. Pp. 484. Cloth. Price, $5.00. Philadelphia: Blakistan Company, 1945.

The authors set up the first Army Air Forces convalescent hospital in this country exclusively for "operational fatigue." Their new book (not intended for the laity, although they could read several chapters with profit) is a summation of their experience with the Air Forces Personnel, who show quantitative rather than qualitative reactions from the foot soldier. The volume of the material available was large, the authors having treated and discharged from the hospital a total of 888 officers and 2,316 enlisted men suffering from operational fatigue. The book is an analysis of what happens to human beings under the terrific strain of modern war, and contains an explanation of the corrective treatments, some of which have been developed during the war. A notable example of this is their "narcosynthesis" with the patient under the effects of proper dosage of sodium pentothal. The end-results attained by the authors show that 97.9 per cent of the officers and 81.2 per cent of enlisted men return to some form of military duty. However, the break-down of the figures shows the amazing fact that ten times as many enlisted men were separated from the service as were officers. The case histories of sixty-five patients are given in detail. The book concludes with a chapter on "Applications from Military to Civilian Psychiatry" and one on "General Social Implications," both of which make very interesting reading.

Since this book gives the pattern that will probably be followed by doctors in civilian practice in treating returnees, for there are not nearly enough trained psychiatrists to do the job, it should be in the hands of every physician who expects to treat those returnees who have been under stress.

Common Ailments of Man: Their Prevention and Relief. Edited by Morris Fishbein, M. D. Cloth. Pp. 177. Price, $1.00. New York: Garden City Publishing Company, 1945.

This book deals, according to the title, with sixteen common conditions, some of which are symptoms rather than diseases. The subjects treated are: Common Colds, Backache, Headache, Hemorrhoids, Nasal Sinuses, Allergy, Arthritis, Neuritis, Varicose Veins, Anemia, Nephritis, Prostate Gland, Heart Disease, High and Low Blood Pressure, Athlete's Foot, and Constipation. Each of these articles was written by a recognized authority on the subject and appeared originally in *Hygeia*. The volume is intended, naturally, for lay reading.

If it receives the wide circulation it deserves it can clear up a lot of mistaken ideas and misconceptions in the minds of the public.